IN THE CLAIMS

1-18 (Canceled)

19. (Previously Presented) An apparatus including:

(a) a release chamber adapted to contain a liquid reactant metal up to a liquid reactant metal level;

(b) a submerging arrangement for moving a container to a release position within the release chamber and below the liquid reactant metal level;

(c) a collection area having an upper boundary defined by an upper surface of the release chamber, the upper surface of the release chamber being spaced apart from a bottom surface of the release chamber along a vertical axis; and

(d) a flow inducing arrangement for inducing a flow of a first liquid reactant metal through the release chamber in a direction transverse to the vertical axis.

20. (Previously Presented) The apparatus of claim 19 further including a liquid reactant containment vessel having a liquid reactant metal flow path to the release chamber and wherein the flow inducing arrangement is located within the liquid reactant metal containment vessel.

21. (Previously Presented) The apparatus of claim 20 wherein the flow inducing arrangement is located proximate to the release chamber.

22. (Previously Presented) The apparatus of claim 19 wherein the submerging arrangement includes a submerging structure adapted to be driven between a retracted position above

the liquid reactant metal level in the release chamber and an extended position in which a distal portion of the submerging structure extends below the liquid reactant metal level.

23. (Previously Presented) The apparatus of claim 22 further including a feed area located adjacent to the release chamber.

24. (Previously Presented) The apparatus of claim 23 wherein a path of the submerging structure from the retracted position to the extended position passes through the feed area.

25. (Previously Presented) The apparatus of claim 24 wherein the flow inducing arrangement is located adjacent to the feed area.

26. (Previously Presented) The apparatus of claim 19 further including a liquid reactant metal treatment system that includes a reaction chamber adjacent to the release chamber in position to receive the first liquid reactant metal flowing through the release chamber.

27. (Currently Amended) The apparatus of claim 19 further including a conduit connected between the collection [chamber] area and a liquid reactant metal treatment system.

28. (Previously Presented) An apparatus including:

(a) a release chamber adapted to contain a liquid reactant metal up to a liquid reactant metal level therein;

(b) a dunker member adapted to be driven along an incline between a retracted

position above the liquid reactant metal level and an extended position in which a distal portion of the dunker member extends to a release location within the release chamber and adjacent to an inlet opening of the release chamber; and

(c) a collection area with an upper boundary defined by an upper surface of the release chamber.

29. (Previously Presented) The apparatus of claim 28 wherein the liquid reactant metal level is above the upper boundary of the collection area.

30. (Previously Presented) The apparatus of claim 28 further including a feed area that is adjacent to the release chamber.

31. (Previously Presented) The apparatus of claim 30 wherein a path of the dunker member from the retracted position to the extended position passes through the feed area.

32. (Previously Presented) The apparatus of claim 28 further including a flow inducing arrangement for inducing the flow of a first liquid reactant metal through the release chamber from the inlet opening of the release chamber to an outlet opening of the release chamber.

33. (Previously Presented) The apparatus of claim 32 further including a reaction chamber adjacent to the release chamber in position to receive the first liquid reactant metal flowing through the outlet opening of the release chamber.

34. (Previously Presented) A method including:

(a) moving a container of feed material to a release location below an upper surface of a liquid reactant metal;

(b) releasing feed material from the container while the container is held at the release location;

(c) collecting a released fluid in a release chamber, the released fluid made up of fluid generated from the released feed material; and

(d) contacting the released fluid with the liquid reactant metal.

35. (Previously Presented) The method of claim 34 further including inducing a flow of liquid reactant metal through the release chamber from an inlet end of the release chamber to an outlet end of the release chamber.

36. (Previously Presented) The method of claim 34 further including the step of contacting the released fluid with a second liquid reactant metal.

37. (Previously Presented) The method of claim 34 further including carrying at least a portion of the released fluid into a reaction chamber in a flow of the liquid reactant metal.

38. (Previously Presented) The method of claim 34 further including the step of removing at least a portion of the released fluid from the release chamber and injecting the removed portion into the liquid reactant metal.

IN THE SPECIFICATION

The following paragraphs are rewritten pursuant to 37 C.F.R. §1.121.

1. Replace the paragraph beginning at page 9, lines 1 through 2 of the specification with the following paragraph:

Figure 8 [in] is a view in section similar to Figure 7, but showing the dunking device fully extended to cause feed material to be released from a container deposited in the apparatus.

2. Replace the paragraph beginning at page 10, lines 1 through 9 of the specification with the following paragraph:

The basic form of the invention shown diagrammatically in Figure 1 provides certain advantages in construction and in handling the required liquid reactant metal by defining release chamber 14, treatment chamber 15, output chamber 16, and heating and conditioning [system] chamber 17, within the single continuous liquid reactant containment vessel 11. However, it will be appreciated that the invention is not limited to this configuration. The various chambers may be formed as separate chambers that are interconnected by suitable conduits or passageways to provide the required transfer of liquid reactant metal and reaction products/feed materials as will be described below. The single containment vessel and separate vessel/chamber configurations are to be considered equivalent for the purposes of the following claims.

3. Replace the paragraph beginning at page 14, lines 9 through 21 of the specification with the following paragraph:

The output chamber 16 in the form of the invention shown in Figures 2 and 3 is located at the right hand end of treatment chamber 15 in position to receive reaction products and liquid reactant metal exiting the treatment chamber. As best shown in Figure 2, output [Output] chamber 16 is defined in containment vessel 11 between wall 29, vessel exterior walls 70 and 31, and an output or surface collection weir 71. Output chamber 16 also includes a cover to isolate the liquid reactant metal in that part of the system from the atmosphere. The cover includes a gas [recovery] collection/recovery hood 73 which extends above the output chamber 16 in that part of the output chamber immediately adjacent to the end of treatment chamber 15. Output weir 71 extends from the top or cover of output chamber 16 down to a level well below the level 41 of liquid reactant metal in the output chamber. Liquid reactant metal may flow readily underneath output weir 71 to exit output chamber 16; however, reaction products and other materials collecting at the surface of the liquid reactant metal in the output chamber are retained in the output chamber to be removed by the reaction product removal arrangement 22 associated with output chamber 16.

4. Replace the paragraph beginning at page 15, lines 1 through 12 of the specification with the following paragraph:

In the form of the invention shown in Figures 2 and 3, the gas removal component 23 of the reaction product removal arrangement 22 (both shown generally in Figure 1) includes a gas removal line 74 connected to receive gases collecting under gas [recovery] collection/recovery hood 73. Line 74 is preferably connected to particle control and recovery equipment (PCE) 75.

PCE 75 may include an aqueous scrubber, a bag house, and/or other particle control and recovery devices known in the field of liquid metal treatment systems. Gas removal component 23 may operate under the pressure generated by the collected gases or may include a vacuum arrangement for drawing gasses from the area of gas [recovery] collection/recovery hood 73. Whether a vacuum is applied or otherwise, output chamber 16 may include a gas separation wall 76 (shown in FIG. 2) that extends downwardly from the output chamber cover to generally the level 41 (shown in FIG. 3) of liquid reactant metal in output chamber 16 to help retain gaseous reaction products in the area of gas [recovery] collection/recovery hood 73 to be withdrawn through removal line 74.

5. Replace the paragraph beginning at page 15, line 13 through page 16, line 2 of the specification with the following paragraph:

The solids/liquids removal component 24 (shown in FIG. 1) in the illustrated form of the invention includes an auger 78 located adjacent to the end of output chamber 16 next to output weir 71. Auger 78 is driven by an auger drive 79 to scrape off solid materials or slag, and perhaps some liquids, which float on the surface of the liquid reactant metal in output chamber 16. These materials removed from the surface of the liquid reactant metal are scraped or directed into a solids removal chute and airlock system shown diagrammatically at reference numeral 80. Although not shown in the drawing, it will be appreciated that solids removal [output] chute and airlock system 80 will include a series of airlock doors or some other arrangement which may be operated to allow solids and liquids collected in the chute to be removed from the treatment system without allowing substantial amounts of air to enter the output chamber.

6. Replace the paragraph beginning at page 17, lines 8 through 20 of the specification with the following paragraph:

The operation of the form of the invention shown in Figures 2 and 3 may be described with particular reference to the section views of Figures 3 through 5. Figure 3 shows the state of treatment apparatus 10 before the container 46 of feed material is released into the feed area 53 of containment vessel 11. In this position, container 46 is held in the feed system isolation or purge chamber 42 between airlock doors 43 and 44, and the area between the airlock doors 43 and 44 is purged with a suitable purge fluid. In this form of the invention the purge fluid comprises flue gas which originates from heating chamber [system] 17, and is then conditioned in flue gas conditioning system 40. From this position shown in Figure 3, lower or inner airlock door 43 may be opened to allow container 46 to drop into containment vessel 11 in feed area 53. As indicated in Figure 4, dunker 52 may then be extended to make contact with container 46 as it floats on the surface of the liquid reactant metal at level 41. It will be noted that in this position shown in Figure 4, liquid reactant metal continues to flow into feed area 53 and from the feed area into release chamber 14 as indicated by the arrows.

7. Replace the paragraph beginning at page 19, lines 1 through 12 of the specification with the following paragraph:

After container 46 has been held in the release position for a period of time to ensure that the bulk of the feed material within the container has been released into release chamber 14, dunker member 52 may be retracted from the fully extended position shown in Figure 5. As dunker member 52 is retracted from its fully extended position, the remains of container 46 either [remain] stay on the bottom of containment vessel 11 or float to the surface. The flow of liquid

reactant metal into release chamber 14 also flushes any solid or liquid remnants of the container to the right in the figure and generally prevents the material from flowing back into feed area 53. Any pieces of solid material larger than the screen size collect against screen 61 until the material either reacts with the liquid reactant metal or melts or dissolves into the liquid reactant metal. The resulting reaction products or melted or dissolved material continues to flow from left to right in the illustrated treatment system through release chamber 14, treatment chamber 15, and ultimately to output chamber 16.

7. Replace the paragraph beginning at page 23, line 11 through page 24, line 5 of the specification with the following paragraph:

The alternate treatment apparatus 10' shown in Figures 6 through 8 includes a similar containment vessel 11', output chamber 16', heating and [condition] conditioning chamber 17', and circulating system including pumps 85' and 86'. However, in this form of the invention the release chamber 14' comprises generally the chamber that defines the area in which the container 46' of feed material is originally deposited into containment vessel 11'. Because container 46' enters the treatment system in the release chamber 14' itself, dunker member 52' is extended by actuator 56' along a vertical axis V in Figure 7, rather than on an incline as shown in the previous embodiment. Treatment apparatus 10' also includes a feed system 20' different from feed system 20 shown in Figures 2 through 5. Feed system 20' includes a feed isolation chamber 42' set off to one side of release chamber 14' to accommodate the movement of dunker member 52' along a vertical axis. An inner door 43' and an outer door 44' work in unison to introduce containers 46' into the system similar to doors 43 and 44 described above with reference to Figure 3. Feed system 20' also includes a plunger 45' adapted to be extended with a suitable actuator to push a

container 46' into release chamber 14' when inner door 43' is opened. Plunger 45' is then retracted to allow door 43' to be closed and outer door 44' opened for loading another container of feed material into isolation chamber 42'.